Torque Specifications

Description	Nm	lb-ft	lb-in
Steering Column Nuts	40	30	—
Shift Interlock Cable	7	—	62
Shift Cable Bracket	12	9	—

External Controls

The transmission shift cable transfers the transmission operating mode from the gearshift lever to the automatic transmission (7003). The indicated position of the transmission floor mounted selector lever is transferred to the transmission through the cable and down to the manual control lever on the transmission.

Shift Interlock System

The brake/shift interlock mechanism is used on vehicles equipped with an automatic transmission. This system is used to prevent shifting from PARK unless the brake pedal is depressed. The brake/shift interlock system consists of an actuator attached to the key interlock assembly and necessary wiring. The shift lock actuator is energized when the ignition switch is turned to the run position, locking the floor mounted transmission range selector lever in the PARK position. When the brake pedal is depressed, the shift lock actuator is deactivated and the floor mounted transmission range selector lever can be moved out of the PARK position.

Transmission Control Switch (TCS)

The transmission control switch (TCS) is a momentary contact switch that is located on the floor mounted transmission range selector lever. Pushing the TCS will either disengage or engage the overdrive function of the automatic transmission. If the OVERDRIVE is disengaged, the word O/D OFF will illuminate on the instrument cluster.

External Controls

Refer to Wiring Diagrams Cell 37 , Shift Lock for schematic and connector information.

Refer to Wiring Diagrams Cell 29 , Transmission Control for schematic and connector information.

Special Tool(s)

ST1137-A	73 Digital Multimeter 105-R0051 or equivalent

Inspection and Verification

1. Verify the customer concern by operating the transmission external control.
2. Visually inspect for obvious signs of mechanical and electrical damage; refer to the following chart:

Visual Inspection Chart

Mechanical	Electrical
● Shift control linkage binding. ● Shift lock actuator. ● Shift control cable. ● Interlock cable.	● Circuitry. ● Central junction box (CJB) fuse: ■ 17 (15A) ■ 28 (15A) ■ 35 (15A) ● Brake pedal position (BPP) switch. ● Wiring harness. ● Loose or corroded connections. ● Bulb.

3. If the concern is not visually evident, determine the symptom. GO to Symptom Chart .

Symptom Chart

SYMPTOM CHART

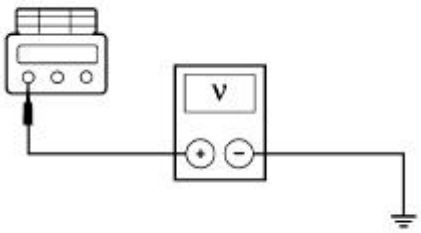
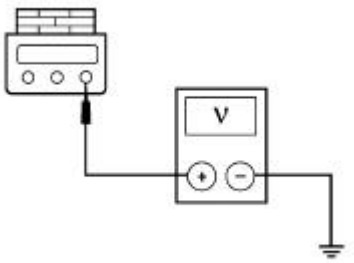
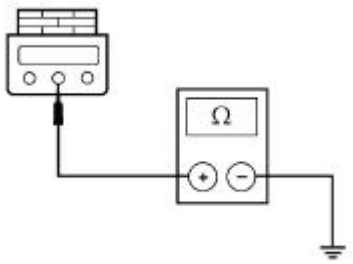
Condition	Possible Sources	Action
● The shift interlock system does not release/lock correctly	● Circuitry. ● CJB Fuse 17 (15A) or Fuse 35 (15A). ● Shift lock actuator. ● Brake pedal position (BPP) switch.	● Go To Pinpoint Test A .

• The shift control is out of correct gear relationship	• Transmission shift cable and bracket. • Retainer bracket. • Shift control linkage out of adjustment.	• Go To Pinpoint Test B .
• Transmission range indicator does not correspond to the gear	• Transmission shift cable bracket. • Transmission shift cable loose from the transmission retainer bracket. • Shift linkage.	• TIGHTEN the bolts holding transmission shift cable bracket. • TIGHTEN the bolts. • VERIFY digital transmission range (DTR) sensor range for correct adjustment. REFER to Section 307-01 .
• The Transmission Control Switch (TCS) Is Inoperative	• CJB Fuse 28 (15A). • TCS. • TCS not cycled during self-test. • Powertrain control module (PCM). • Circuitry.	• Go To Pinpoint Test C .
• The Transmission Control Indicator Lamp (TCIL) Is Not Operating Correctly	• Bulb. • Instrument cluster. • Powertrain control module.	• REFER to Section 413-01 .
• Excessive Shift Effort	• Transmission shift cable. • Cable bracket.	• INSTALL a new transmission shift cable. • ADJUST the cable. TIGHTEN the screws.
• Transmission Range Selector Lever Will Not Shift	• Transmission shift cable. • Broken transmission shift cable.	• INSTALL a new transmission shift cable. • INSTALL a new transmission shift cable.

Pinpoint Tests

PINPOINT TEST A: THE SHIFT INTERLOCK SYSTEM DOES NOT RELEASE/LOCK CORRECTLY

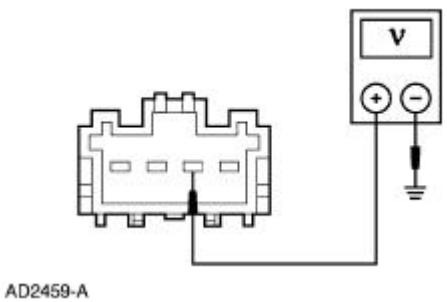
Test Step	Result / Action to Take
A1 TEST THE BRAKE LIGHTS	
• Key in ON position. • Apply the brake pedal and observe the stoplamps. • **Do the stoplamps illuminate?**	**Yes** GO to A2 . **No** REFER to Section 417-

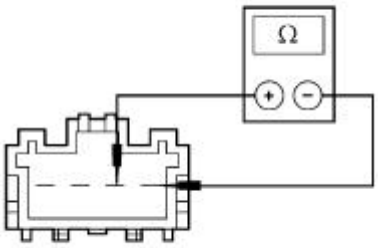
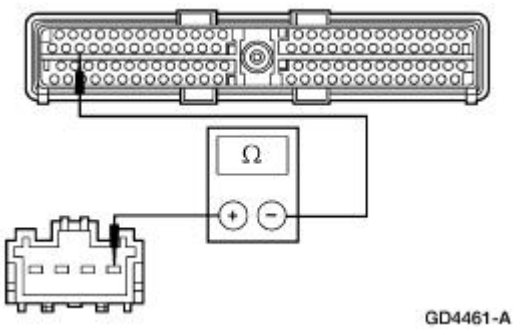
	01 .
A2 CHECK CIRCUIT 511 (LG) FOR AN OPEN ● Key in OFF position. ● Disconnect: Shift Lock Actuator C2127. ● Measure the voltage between the shift lock actuator C2127-3, Circuit 511 (LG), harness side and ground while depressing and releasing the brake pedal.  GD4459-A ● **Is the voltage greater than 10 volts with the brake pedal depressed and 0 volts with the brake pedal released?**	**Yes** GO to A3 . **No** REPAIR the circuit. TEST the system for normal operation.
A3 CHECK CIRCUIT 294 (WH/LB) FOR AN OPEN ● Key in ON position. ● Measure the voltage between shift lock actuator C2127-1, Circuit 294 (WH/LB), harness side and ground.  GD2180-A ● **Is the voltage greater than 10 volts?**	**Yes** GO to A4 . **No** REPAIR the circuit. TEST the system for normal operation.
A4 TEST CIRCUIT 1205 (BK) FOR AN OPEN ● Measure the resistance between shift lock actuator C2127-2, Circuit 1205 (BK), harness side and ground.  GD2181-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new shift lock actuator. REFER to Brake Shift Interlock Actuator . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST B: THE SHIFT CONTROL IS OUT OF CORRECT GEAR RELATIONSHIP

Test Step	Result / Action to Take
B1 CHECK THE SHIFT CONTROL LINKAGE	
• Key in ON position. • Apply the brake pedal. • Actuate the transmission range selector lever in all ranges. • Observe the shift control linkage during operation. • **Is the shift control linkage OK?**	**Yes** GO to B2 . **No** REPAIR as necessary. TEST the system for normal operation.
B2 CHECK THE TRANSMISSION SHIFT CABLE	
• Check the transmission shift cable and bracket installation and tightness. • **Is the transmission shift cable correctly installed and adjusted?**	**Yes** GO to B3 . **No** REPAIR as necessary. TEST the system for normal operation.
B3 CHECK THE LINKAGE/CABLE FOR CORRECT GEAR RELATIONSHIP	
• Apply the brake pedal. • Actuate the transmission range selector lever in all ranges. • **Does the indicator match the gear selection?**	**Yes** VERIFY the correct adjustment of the digital transmission range (DTR) sensor. REFER to Section 307-01 . Adjust the digital DTR sensor if necessary. TEST the system for normal operation. **No** ADJUST the transmission shift cable. REFER to Cable Adjustment . TEST the system for normal operation.

PINPOINT TEST C: THE TRANSMISSION CONTROL SWITCH (TCS) IS INOPERATIVE

Test Step	Result / Action to Take
C1 CHECK THE VOLTAGE TO THE TRANSMISSION CONTROL SWITCH	
• Key in OFF position. • Disconnect: Transmission Control Switch C279. • Key in ON position. • Measure the voltage between TCS C279-3, Circuit 911 (WH/LG), harness side and ground.  AD2459-A	**Yes** GO to C2 . **No** REPAIR the circuit. TEST the system for normal operation.

• **Is the voltage greater than 10 volts?**	
C2 CHECK THE TCS	
• Measure the resistance between TCS Pin 3 (component side), and TCS Pin 4 (component side), while depressing and releasing the TCS.  GD4460-A • **Is the resistance less than 5 ohms with the TCS depressed and greater than 10,000 ohms with the TCS released?**	**Yes** GO to C3 . **No** INSTALL a new TCS. Test the system for normal operation.
C3 CHECK CIRCUIT 224 (TN/WH) FOR AN OPEN	
• Key in OFF position. • Disconnect: PCM C175. • Measure the resistance between TCS C279-4, Circuit 224 (TN/WH), harness side and PCM C175-29, Circuit 224 (TN/WH), harness side.  GD4461-A • **Is the resistance less than 5 ohms?**	**Yes** REFER to Powertrain Control/Emissions Diagnosis (PC/ED) manual. **No** REPAIR the circuit. TEST the system for normal operation.

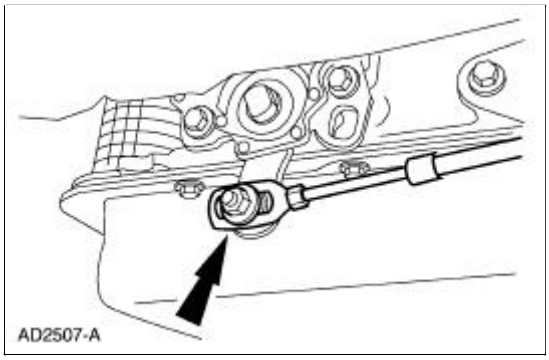
Cable Adjustment

1. **NOTE:** Make sure that the range selector lever is tight against the rearward overdrive stop.

   Place the transmission range selector lever in the overdrive position.

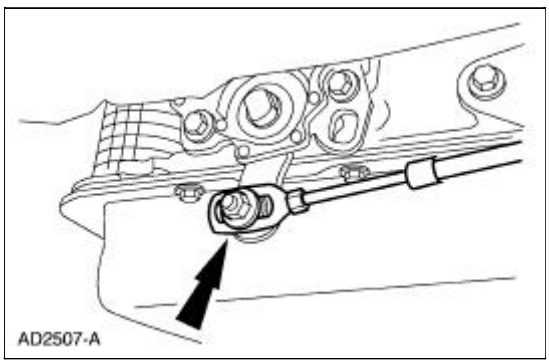
2. Raise and support the vehicle. For additional information, refer to Section 100-02 .

3. Loosen the manual control lever nut.



4. Place the transmission manual control lever in the overdrive position.

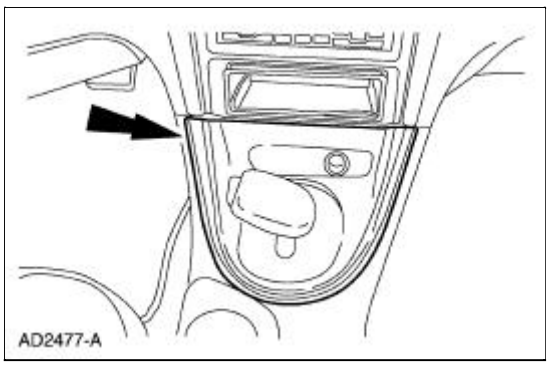
5. Tighten the nut on the manual control lever.



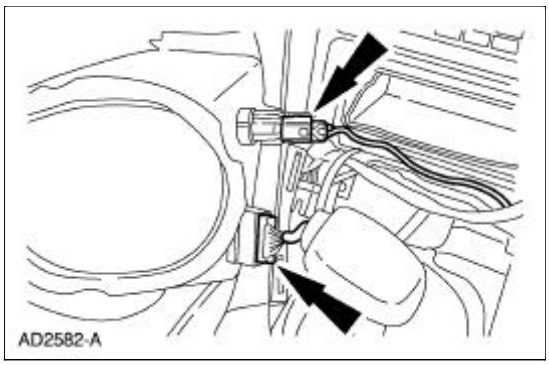
Brake Shift Interlock Actuator

Removal

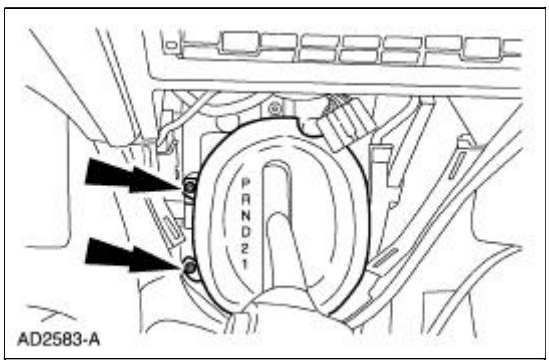
1. Remove the shifter top control panel.



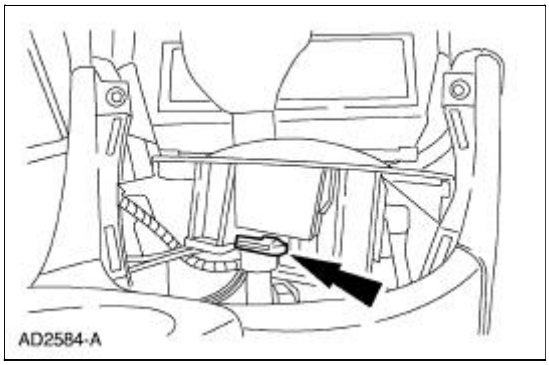
2. Disconnect the electrical connectors.



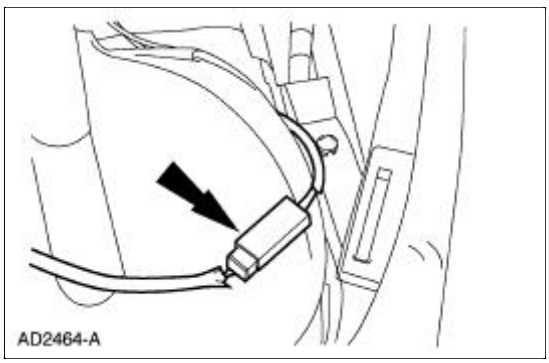
3. Remove the shifter bezel.



4. Remove the bulb from the bezel.

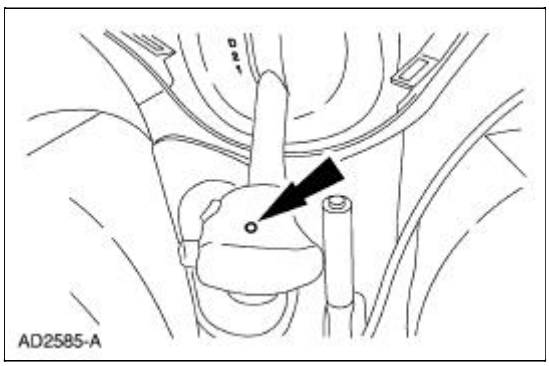


5. Disconnect the electrical connector.

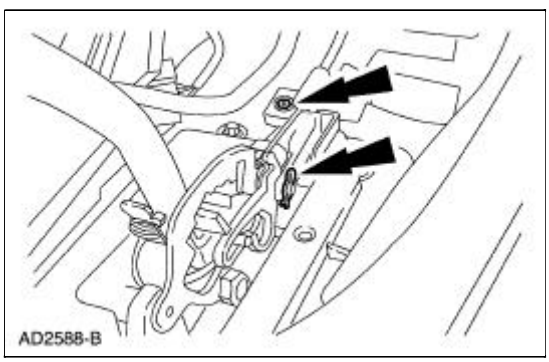


6. **CAUTION: Extra force may be needed to lift up on the handle. Do not to pull too far or damage to the overdrive cancel button may result, as the wires may be pulled out of the switch.**

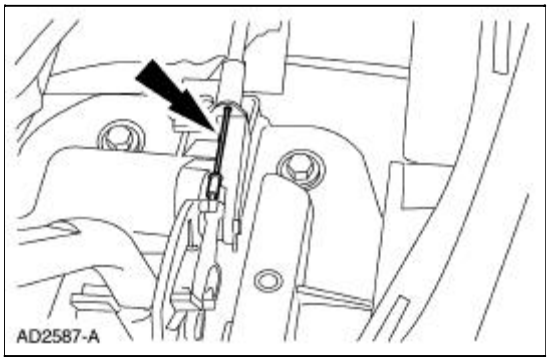
   Remove the screw and the handle.



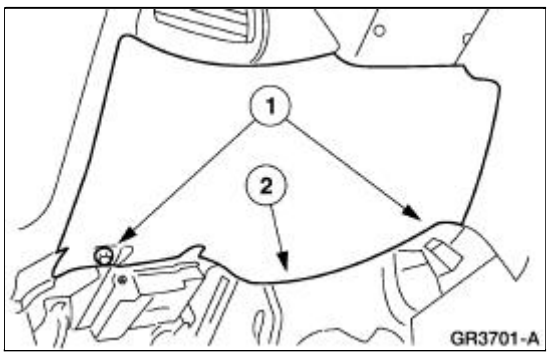
7. Remove the clip and bolt from the brake shift interlock cable.



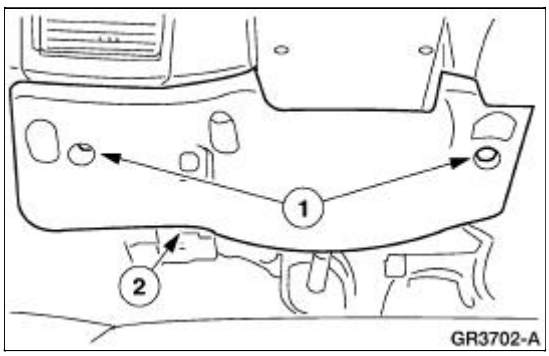
8. Disconnect the shift interlock cable.



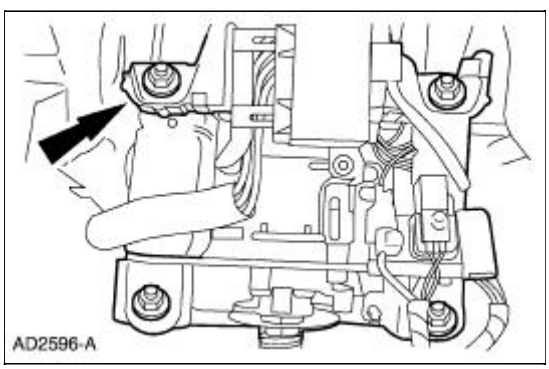
9. Remove the instrument panel steering column cover.
    1. Remove the screws.
    2. Remove the instrument panel steering column cover.



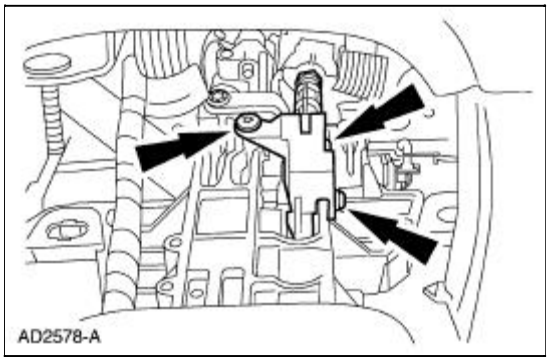
10. Remove the instrument panel reinforcement.
    1. Remove the screws.
    2. Remove the instrument panel reinforcement.



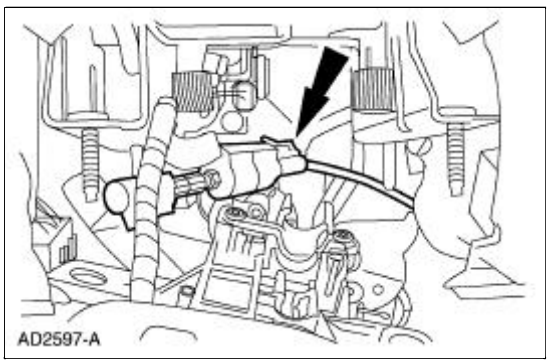
11. Remove the nuts and lower the steering column.



12. Remove the screws from the brake shift interlock cable.

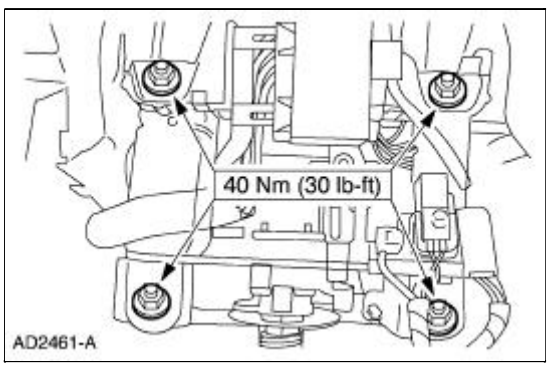


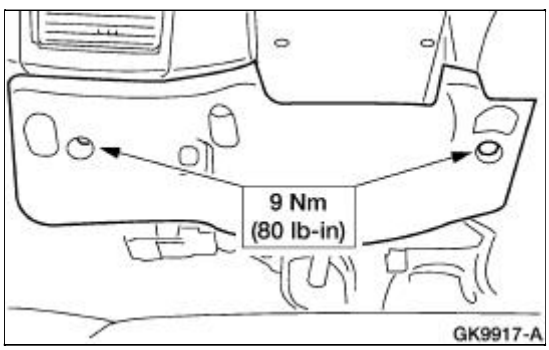
13. Remove the brake shift cable interlock actuator.

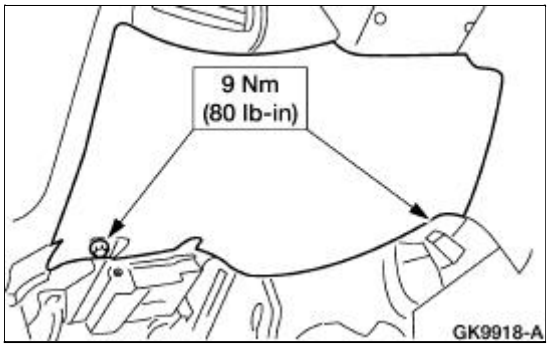


Installation

1. To install, reverse the removal procedure.



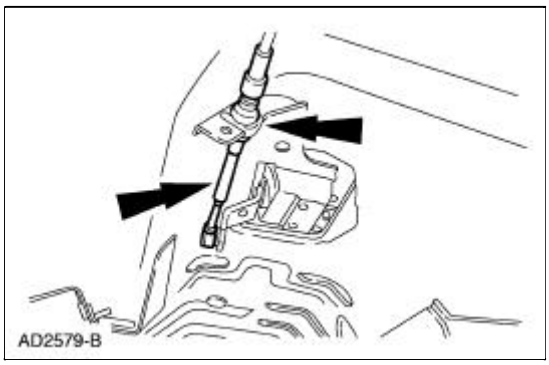



9 Nm
(80 lb-in)
GK9918-A

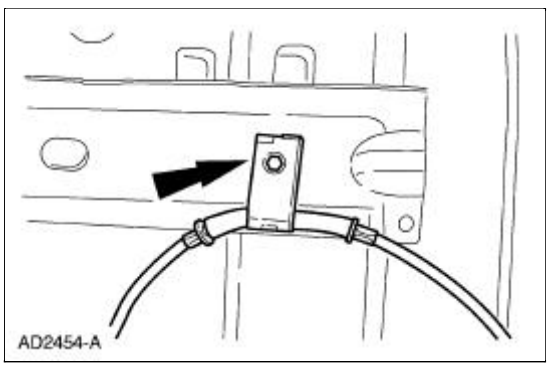
Cable and Bracket

Removal

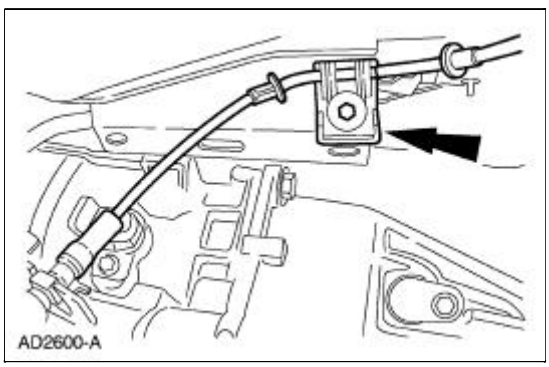
1. Raise the vehicle on a hoist. For additional information, refer to Section 100-02 .
2. Remove the cable shift from the shifter lever and bracket and discard the clip.



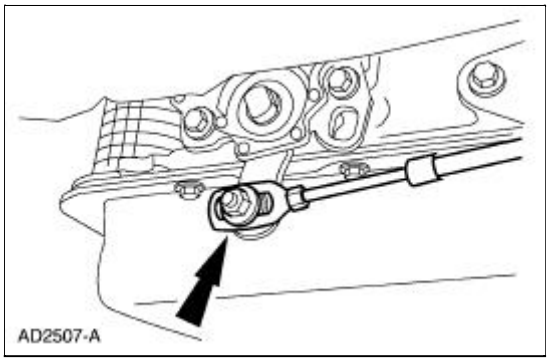
3. Remove the bolt from the cable.



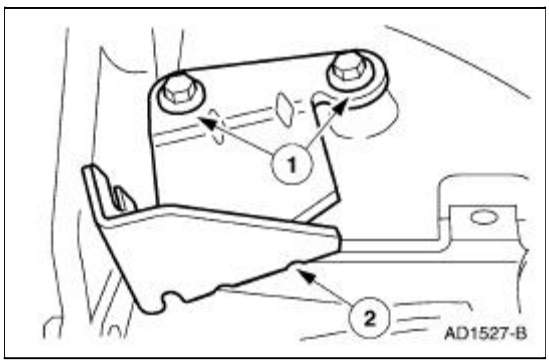
4. Remove the bolt from the cable.



5. Disconnect the transmission range selector lever cable from the TR sensor lever.



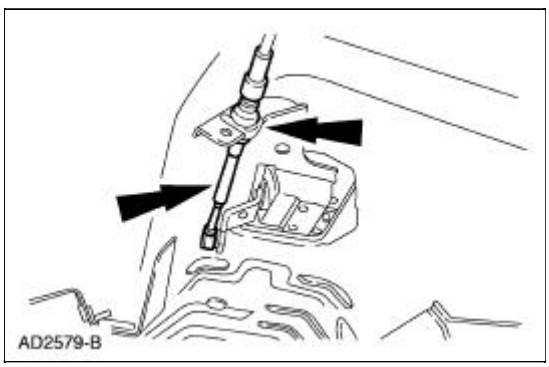
6. Remove the transmission shift cable bracket (7B229) from the transmission.
    1. Remove the bolts.
    2. Remove the bracket.



Installation

1. **NOTE:** It is necessary to install a new plastic clip prior to installation.

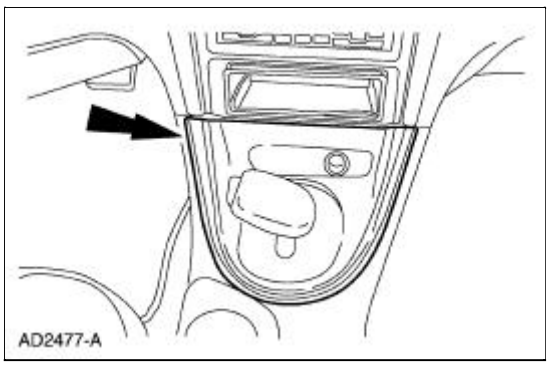
    To install, reverse the removal procedure.



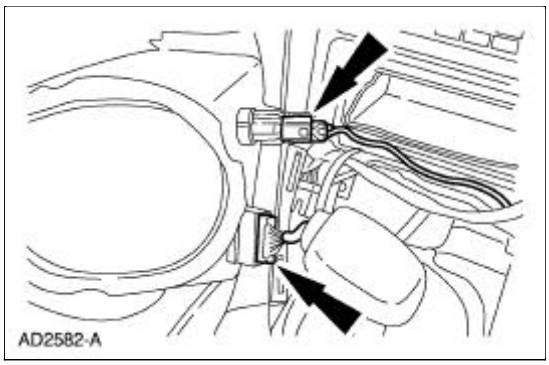
Selector Lever

Removal

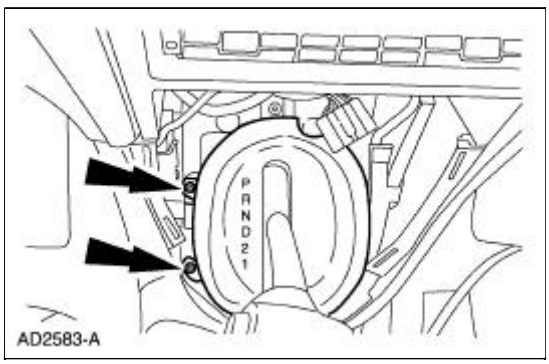
1. Remove the shifter top control panel.



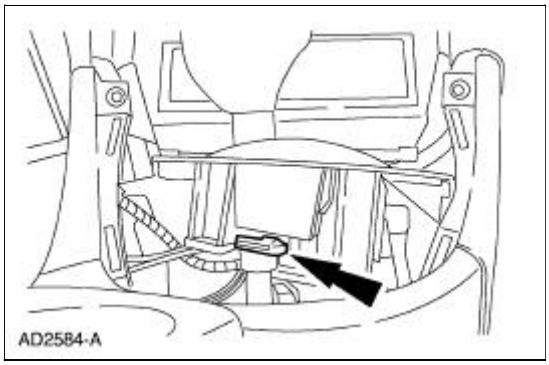
2. Disconnect the electrical connectors.



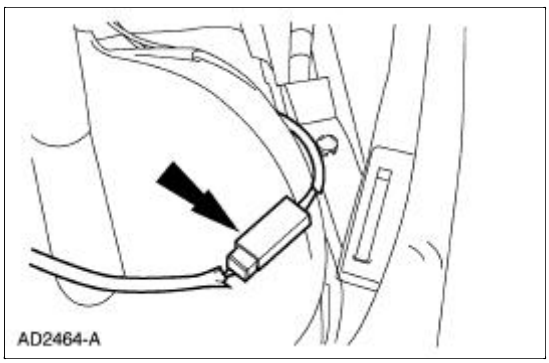
3. Remove the shifter bezel.



4. Remove the bulb from the bezel.

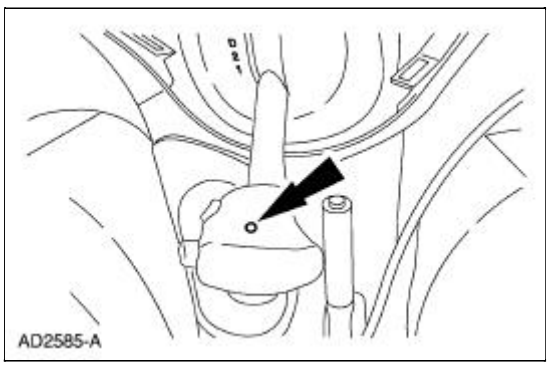


5. Disconnect the TCS connector.



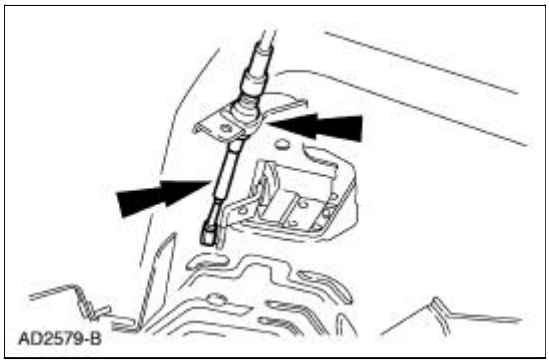
6. **CAUTION: Extra force may be needed to lift up on the handle. Do not to pull too far or damage to the overdrive cancel button may result, as the wires may be pulled out of the switch.**

   Remove the screw and the handle.

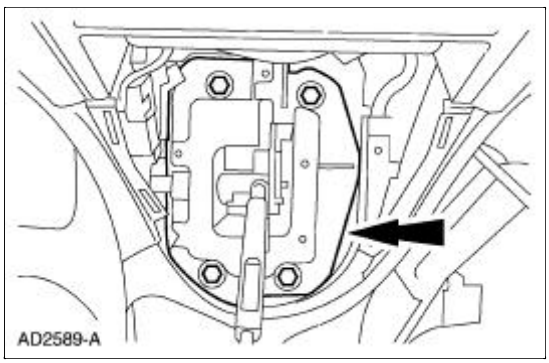


7. Raise and support the vehicle. For additional information, refer to Section 100-02 .

8. Disconnect the shift cable and discard the plastic clip.



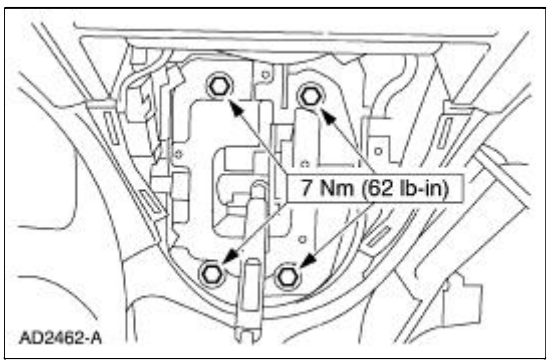
9. Lower the vehicle.
10. Remove the shifter.



Installation

1. **NOTE:** It is necessary to install a new plastic clip prior to installation.

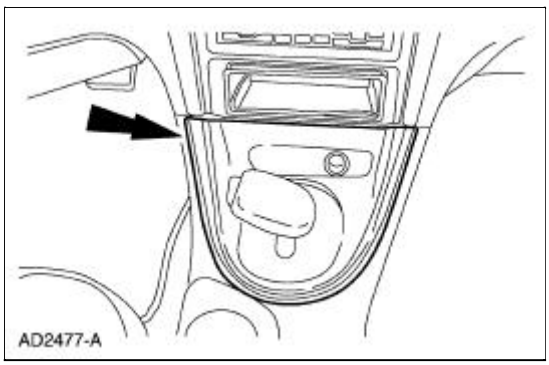
   To install, reverse the removal procedure.



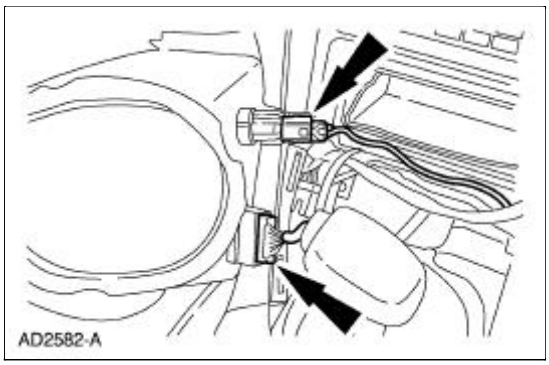
Transmission Control Switch

Removal

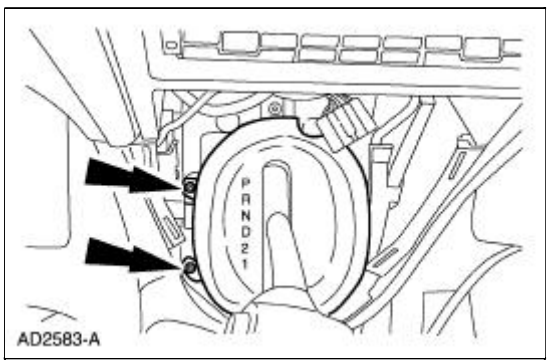
1. Remove the shifter top control panel.



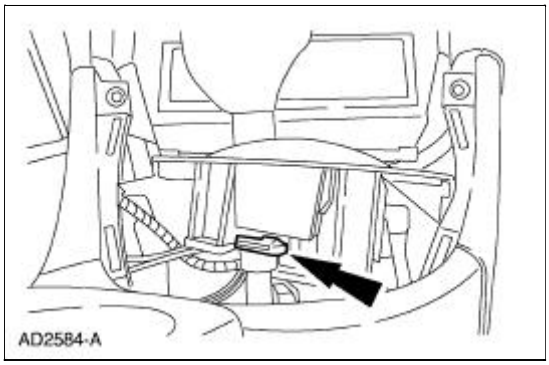
2. Disconnect the electrical connectors.



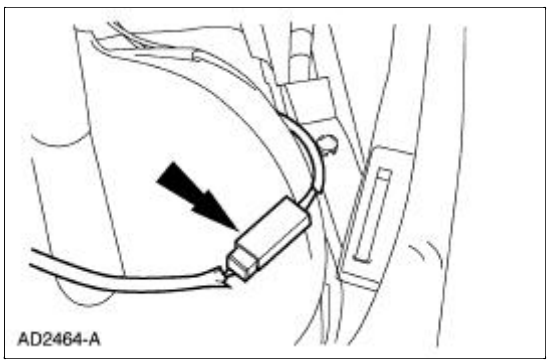
3. Remove the shifter bezel.



4. Remove the bulb from the bezel.

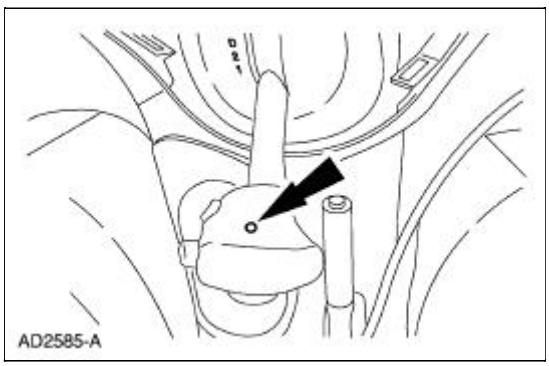


5. Disconnect the TCS connector.

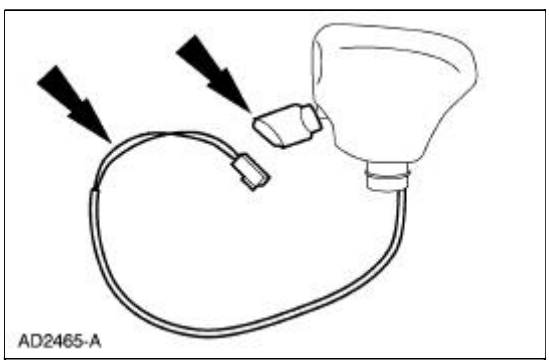


6. **CAUTION: Extra force may be needed to lift up on the handle. Do not to pull too far or damage to the overdrive cancel button may result, as the wires may be pulled out of the switch.**

   Remove the screw and the handle.



7. Remove the transmission control switch.



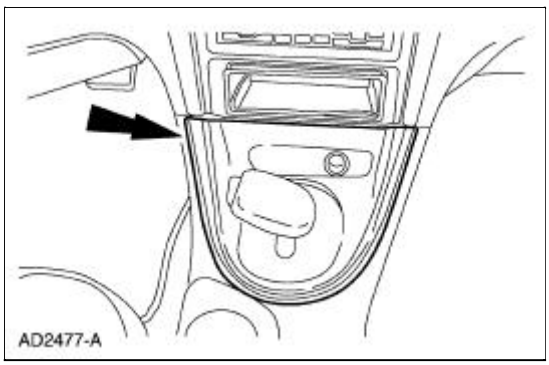
Installation

1. To install, reverse the removal procedure.

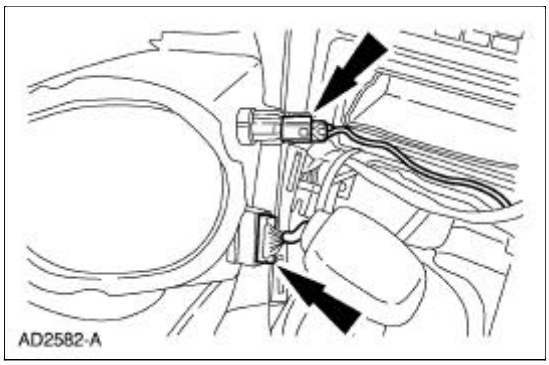
Bezel

Removal

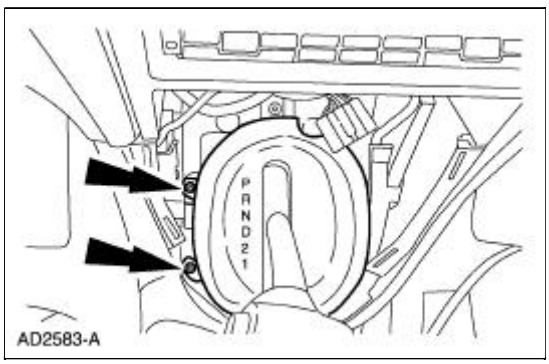
1. Remove the shifter top control panel.



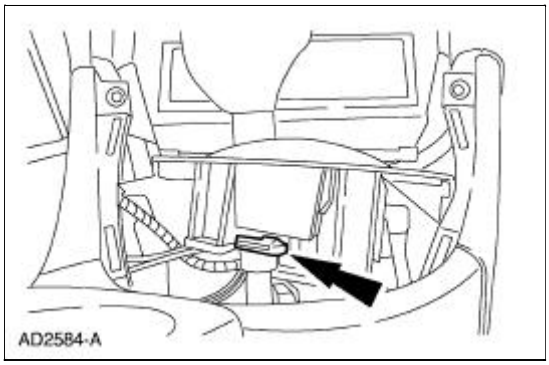
2. Disconnect the electrical connectors.



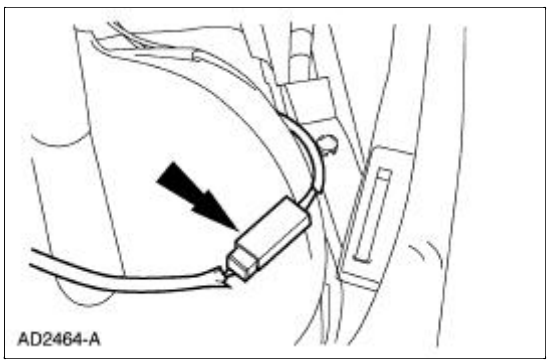
3. Remove the shifter bezel.



4. Remove the bulb from the bezel.

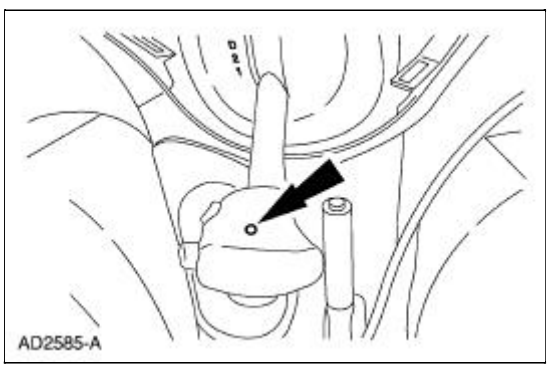


5. Disconnect the connector.



6. **CAUTION: Extra force may be needed to lift up on the handle. Do not to pull too far or damage to the overdrive cancel button may result, as the wires may be pulled out of the switch.**

   Remove the screw and the handle.



7. Remove the bezel.

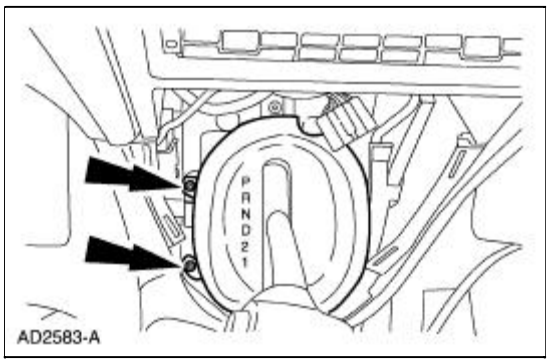
Installation

1. To install, reverse the removal procedure.

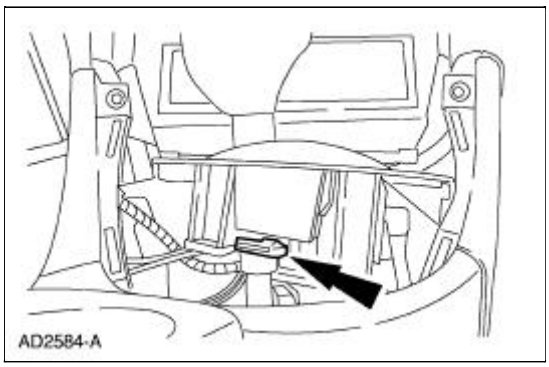
Bulb

Removal and Installation

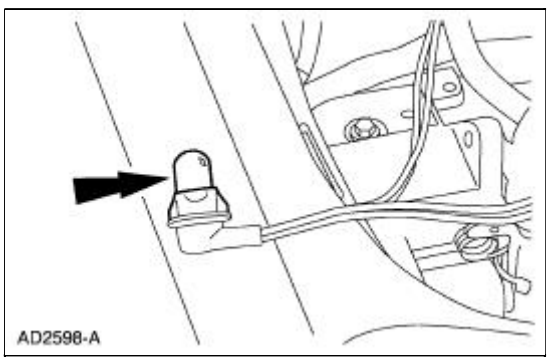
1. Remove the floor console. For additional information, refer to Section 501-12 .
2. Remove the bolts, then position the bezel upward.



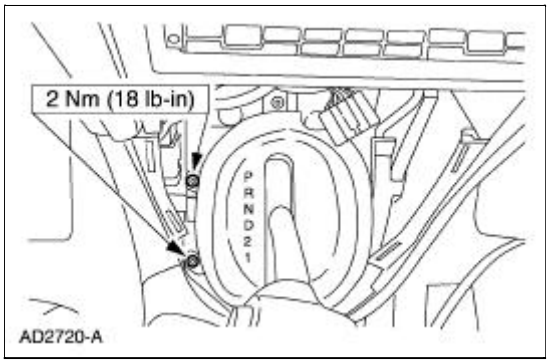
3. Remove the bulb socket from the bezel.



4. Remove the bulb.



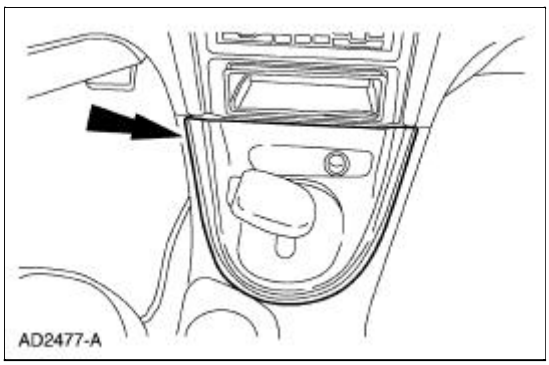
5. To install, reverse the removal procedure.


2 Nm (18 lb-in)
PRND21
AD2720-A

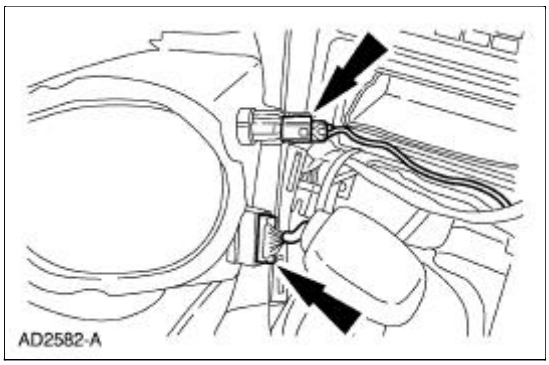
Knob

Removal

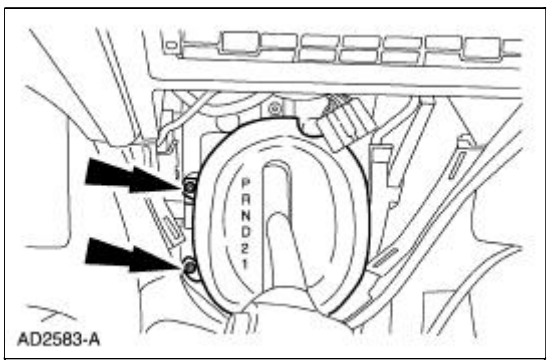
1. Remove the shifter top control panel.



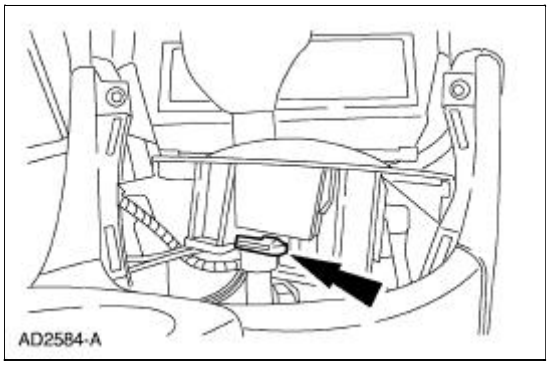
2. Disconnect the electrical connectors.



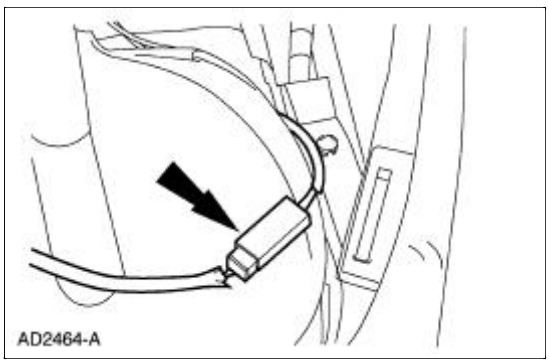
3. Remove the shifter bezel.



4. Remove the bulb from the bezel.

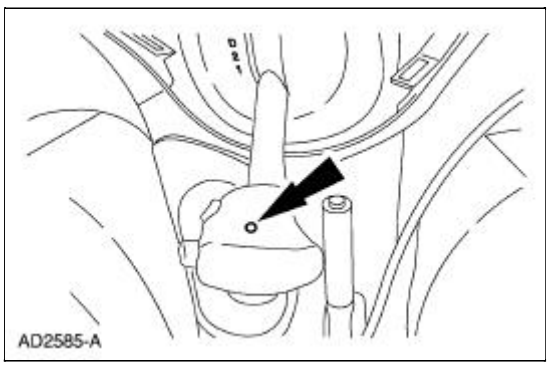


5. Disconnect the TCS connector.

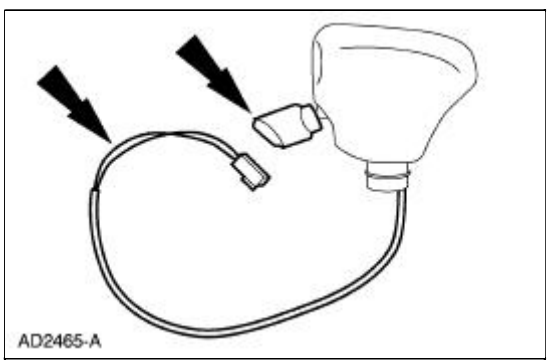


6. **CAUTION: Extra force may be needed to lift up on the handle. Do not to pull too far or damage to the overdrive cancel button may result, as the wires may be pulled out of the switch.**

   Remove the screw and the handle.



7. Remove the transmission control switch.



Installation

1. To install, reverse the removal procedure.